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THE ROLE OF NURSES IN OPTIMIZING THE PREVENTION OF CARDIOVASCULAR DISEASES

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ANNOTATION: The aim of the study: to optimize the work of visiting nurses in the prevention of cardiovascular diseases (CVD) using information technologies.

Application Electronic personalized individual health card optimizes the work of doctors in clinics, filled in by nurses, conducting tests and questionnaires, measuring blood pressure (BP), anthropometric indicators, conducting bioimpedance analysis of body composition, and will also contribute to the introduction of innovative technologies in primary health care. Increasing awareness of nurses about the main risk factors for CVD, a healthy lifestyle, assessing anthropometric parameters, conducting tests to determine physical fitness (PhF), promoting a healthy lifestyle among the population. Participation in the control of CVD risk factors of visiting nurses will increase compliance with the doctor and patients.

Keywords: personal health card, cardiovascular diseases, cardiovascular risk, prevention.

Cardiovascular diseases (CVD) remain the leading cause of death among the adult population in Uzbekistan and account for more than 61% [1]. Information technologies are actively being introduced into various spheres of life, including healthcare, which leads to a radical change in the quality of life of people [2]. Medical prevention is recognized as a priority area of state policy in the healthcare system. The system of training mid-level medical personnel faces an important task - graduating specialists qualified in the prevention of various diseases. The activities of a nurse of an outpatient clinic service in organizing and conducting preventive work include various interrelated areas. The formation of an information database involves the allocation of the service contingent into health groups, dispensary groups, decreed population groups based on the results of screening - a targeted examination to identify people with a certain pathology, which is possible by a nurse together with a therapist or cardiologist [3,4].

The participation of a nurse in measures to prevent cardiovascular diseases includes: maintaining accounting and reporting documentation, creating an information bank, providing patronage, identifying risk factors for cardiovascular diseases, promoting a healthy lifestyle (HLS), participating in receiving patients, participating in preventive examinations and medical examinations, participating in the formation of health groups and maintaining dispensary groups [4]. Evaluation of individual health criteria, prevention and rehabilitation of cardiovascular diseases at the primary health care level is a pressing issue and formed the basis of this study.

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The purpose of the study: optimization of the work of visiting nurses in the prevention of cardiovascular diseases using information technology.

Material and methods of the study. As part of a preventive examination, 378 respondents attached to the clinic were examined, 300 of whom had not previously been observed with CVD and 78 patients with CVD (arterial hypertension (AH), coronary heart disease (CHD), angina pectoris (AP) functional class 1-2 (FC) aged 30-60 years, the average age was 39.6 ± 18.5 years. All respondents were determined cardiovascular risk (CVR) according to SCORE2. The control group consisted of 30 healthy individuals without CVD with low CVR aged under 40 years. The following was carried out: a standard questionnaire survey according to the developed questionnaire; assessment of hemodynamic and anthropometric parameters (body weight BM, waist circumference WC, hip circumference HC, determination of the WC/HC ratio, height); ECG; in the blood serum, assessment of lipid spectrum parameters (cholesterol, low-density lipoproteins LDL, triglycerides TG, high-density lipoproteins (HDL), blood serum glucose, creatinine, urea, serum uric acid level, C-reactive protein; bioimpedance analysis of body composition on the MEDASS-ABC-01 device (body mass index BMI, determination of the percentage of visceral and total fat tissue, percentage of muscle mass, % extracellular fluid, % of the share of active cell mass, basal metabolic rate, metabolic age). The level of tolerance to physical activity, physical fitness (PhF) was determined based on the results of the six-minute walk test (SMWT), the Ruffier test, these tests were carried out by a nurse together with a therapist. Psychosocial factors (stress, social isolation, depression) were assessed using the Reeder L. questionnaire. An electronic questionnaire survey card and a personalized automated health card were developed with the implementation of preventive and educational aspects of health care through the integrated use of application software (mobile applications), which was filled in by a nurse. The second stage of the study was the training of 25 visiting nurses. When creating the program, programs for working with the Web site were used. Backed Laravel (PHP), Frontend React (Ant Desing), DB MYSQL, Android React Native (Webwiew). With the help of Backed Laravel (PHP), a user interface platform (MVC) for PHP, development was carried out in the PHP programming language and allowed creating a comprehensive program project [6,7].

The clinical characteristics of patients are presented in Table 1.

Table 1. Clinical characteristics of patients

Groups	**n (%)**
Control	30
Average age, years	35,0±5,2 лет
Total patients	378
Average age of patients, years	39,6±18,5
Males	85 (22,5%)
Women	293 (77,5%)

Statistical processing of the research results was carried out by the generally accepted method using a personal computer (the program "Excel 2010"). The arithmetic mean (M)

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and the error of the arithmetic mean (m) were determined. To determine the statistical significance of differences between the compared indicators, Student's t-test was used.

Research results and discussion. The creation of an information system in the clinic is due to the need to use a large and constantly growing amount of information in solving therapeutic, statistical and other problems [2,5].

All patients were identified with CVD risk factors, the level of CVR SCORE2, the level of physical fitness, a physical prevention program, a nutrition program with calculation of the basal metabolic rate, psychological prevention were selected by a general practitioner together with a physical therapy doctor and a psychotherapist. The minimum staff of the "training school" should consist of a specialist conducting training - a general practitioner and a nurse. The rehabilitation program included: development of an individual program for rational nutrition, with a 10-30% reduction in basal metabolic rate in cases of overweight and obesity; a physical rehabilitation complex; a psychological relief program. Patient training included a physical rehabilitation complex (PRC) and included group classes in therapeutic exercise with aerobic training, dosed walking depending on PhF daily, training in proper nutrition, and psychological relief classes that increased motivation for a healthy lifestyle. Patients were examined initially and after 3 months of drug and non-drug rehabilitation. The data was entered into an electronic health card, which tracked the dynamics of the results obtained. When filling out an electronic card, patient data, anamnesis data, clinical and laboratory examination data, determination of the level of physical performance are entered, anthropometric and metabolic indicators, stress level are determined, which are entered into the card, the CVR according to SCORE2, risk group are automatically calculated, risk factors and target values of certain indicators are determined, then a prevention program with a scheme of rehabilitation programs is offered. An electronic personalized health card and a mobile application based on it were developed. According to which the CVR according to SCORE2, risk groups, the level of PhF according to the developed five-step scale were automatically calculated based on the results of the TSH test, the Ruth-Dixon test; non-HDL-C, BMI, and based on the obtained indicators and data analysis, risk factors and recommendations for their control, prevention schemes and programs (physical activity, diet and caloric content with the calculation of the required basal metabolism, mental adaptation programs) are automatically determined. This program and mobile application are convenient for work at the level of family clinics, as well as possible screening examination of employees in organizations, educational institutions for the purpose of early detection of CVD risk factors.

Of the 378 respondents examined, visceral obesity (VO) was determined in 266 individuals (70.4%), while overweight was observed in 92 individuals (24.3%), stage 1 obesity in 80 individuals (21.2%), stage 2 obesity in 69 individuals (18.2%); hypertension with BP over 140/90 mm Hg in 132 patients (35%); increased fasting glucose and diabetes in 40 patients (10.6%), dyslipidemia and hyperlipidemia in 200 individuals (53%), smoking in 38 patients (10%), physical inactivity was observed in 140 individuals (37%); high stress levels were observed in 85 patients (22.5%), a family history of CVD in one parent in 125 patients (33%), and a family history of both parents in 75 patients (19.8%) (Table 2).

Table 2. Risk factors identified in the surveyed respondents

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Groups	n (%)
Individuals with low and medium CVR	110 (29,1%)
Individuals with high CVR	98 (25,9%)
Individuals with very high CVR	92 (24,3%)
Patients with CVD (very high risk)	78 (28,1%)
VO	266 (70,4%)
Overweight (BMI 25-29.9)	92 (24,3%)
Obesity stage 1 (BMI 30-34.9)	80 (21,2%)
Obesity stage 2 (BMI 35-39.9)	69 (18,2%)
AG	132 (35%)
Increased fasting glucose, diabetes	40 (10,6%)
Smoking	38 (10%)
Hyperlipidemia and/or dyslipidemia	200 (53%)
Decreased physical activity (physical inactivity)	140 (37%)
High stress levels	85 (22,5%)
A burdened heredity in one of the parents for CVD	125 (33%)
A burdened heredity in both parents	75 (19,8%)

According to the primary preventive examination, normal BP was observed in 47.6% (n=180), high BP in 17.46% (n=66), and stage 1-3 hypertension was observed in 35% (n=132).

The average SBP among all subjects was 149.2±28.0 mmHg, and DBP was 99.5±19.4 mmHg.

The prevalence of hypertension was 35% (n=132), of which 25% learned for the first time that they had high BP, 75% had previously noted increases in BP, and only 45% were regularly taking antihypertensive therapy.

VO was identified based on the waist-to-hip ratio, as well as the % visceral fat and % total fat tissue values based on bioimpedance analysis of body composition (Fig. 1).

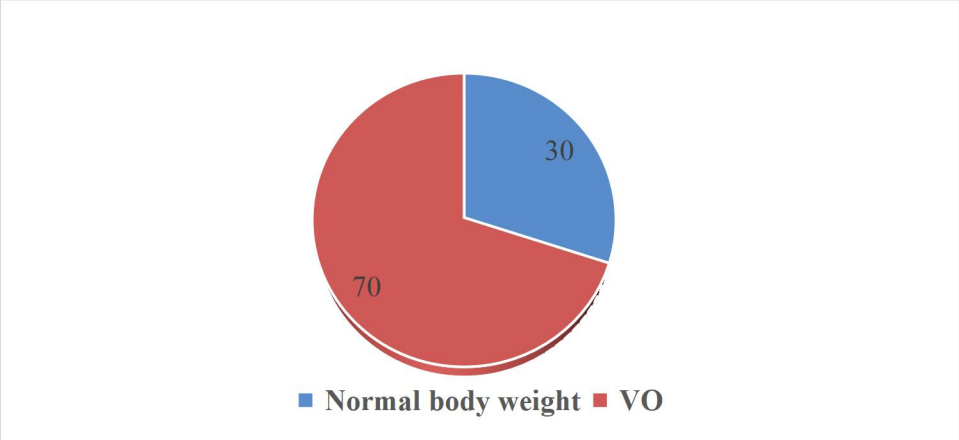

Figure 1. Visceral obesity (VO)

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Determination of CVD according to SCORE2 showed that there were 110 individuals with low and moderate CVD, CVD was 1.5±1.5%, the average age was 35.0±8.56 years; 98 individuals with high risk, CVD – 6.8±1.7%, the average age was 47.3±7.9 years; 92 individuals with very high risk without CVD, 17.4±5.9%, the average age was 50.3±9.0 years; 78 patients with CVD for whom the SCORE scale was not used, the average age was 58.6±8.2 years.

Nurses can keep records reflecting the treatment of a specific patient and his or her condition. Nurses play a special role in explaining to patients the importance of recognizing the symptoms of the disease, as well as in discussing with them individual possibilities for changing their lifestyle and modifying risk factors. Nurses can provide significant assistance in consulting patients on the volume of social activity, vaccination, contraception, and also monitor the correctness of medical recommendations and physical activity [4]. The second stage of the study was the training of 25 visiting nurses. This included informing nurses about the main risk factors for CVD, normal blood pressure levels, recommended doses of vegetables and fruits, and normal serum glucose levels. Training nurses to conduct questionnaires on a personal health card, assess anthropometric parameters, correctly classify body weight and calculate BMI, conduct tests to determine PhF: SMWT and the Ruffier-Dixon test, fill out electronic cards and conduct a "School" to promote a healthy lifestyle among the population. In recent years, large-scale reforms have also been carried out in the healthcare system in Uzbekistan. As part of the healthcare system reform, certain work is being carried out to form a modern system of primary health care, prevention and early detection of diseases, training qualified medical personnel, including nurses, as well as the introduction of information and communication technologies in this area.

With the help of information technology and programming, the obtained data and recommendations for assessing CVD risk factors are systematized. An electronic personalized card with the calculation of the total cardiovascular risk, risk groups, on the basis of which preventive programs are proposed, is convenient for filling out by nurses and monitoring the dynamics of observation and will help facilitate the work of general practitioners and contribute to the optimization of preventive work on primary and secondary prevention of CVD at the primary health care level.

Conclusions. Thus, the involvement of a nurse to assess the indicators of a personal health card, risk factors for the development of CVD has practical significance at the level of outpatient healthcare and improving the home care service of nurses; A computerized personalized individual health card filled in by medical nurses, conducting tests and questionnaires, measuring blood pressure, anthropometric indicators, conducting bioimpedance analysis of body composition will facilitate the introduction of innovative technologies in primary health care.

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